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Some New Weeds of Iowa

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SOME NEW WEEDS OF IOWA

AGRICULTURAL EXPERIMENT STATION
IOWA STATE COLLEGE OF AGRICULTURE
AND MECHANIC ARTS

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AMES, IOWA

SOME NEW WEEDS OF IOWA

By L. H. Pammel and Charlotte M. King

Greatly increased interest has been shown recently thruout Iowa in the recognition of weeds which are injurious to the farmer. The county weed demonstrations put on by the extension service of Iowa State College have been very helpful in extending the knowledge of the weeds of the state. It is very important that new serious weeds be recognized promptly, and timely measures employed to prevent them from becoming a menace to agriculture. Thirty years ago the extermination of quack grass in the state might have been accomplished at the cost of a quarter of a million dollars; today, however, several millions of dollars would not be sufficient to remove the weed.

In a recent general weed survey of Wisconsin, Michigan, New York, Pennsylvania, New Jersey and Ohio, the senior author saw pastures and fields in New York, Pennsylvania and New Jersey which were white with the bloom of *wild carrot*. This weed occurs, of course, in Iowa, having already a good foothold in many sections, but effective means should be used to remove this weed and to prevent its further extension. In northern Wisconsin and Michigan large areas have been taken over by *Canada thistle;* in some oat fields the masses of weeds exceeded the oats in extent. In the states named there were observed great quantities of *bouncing betty* and *toadflax*. Every effort should be used to remove these weeds, lest they become a great detriment to agriculture. The perennial *sow thistle* is a serious menace to crops in Canada and Minnesota. It occurs also in a few localities in Iowa. Unless this *sow thistle* is removed now, in 15 years from today a campaign will be required for its removal.

With few exceptions the 17 weeds described in this circular have been introduced and are being distributed by the means of clover and alfalfa seed grown outside of Iowa.

SOME NEW WEEDS OF IOWA

The following list of weeds are the ones discussed in this circular:

Hoary Alyssum—*Berteroa incana* (L) D. C.
Perfoliate-leaved Peppergrass—*Lepidium perfoliatum* L.
Hoary Cress—*Lepidium Draba* (L) R. Br.
Caper Spurge—*Euphorbia Lathyrus* L.
Gaura—*Gaura biennis* L.
Wild Blue Morning Glory—*Ipomoea hederacea* Jacq.
Viper's Bugloss Blue-weed—*Echium vulgare* L.
Tarweed or Gumweed—*Grindelia squarrosa* (Pursh) Dunal.
Galinsoga—*Galinsoga parviflora* Cav.
Plumeless Thistle or Musk Thistle—*Carduus nutans* L.
Smaller Plumeless Thistle—*Carduus acanthoides* L.
Uncut-leaved Canada Thistle—*Cirsium arvense* var. *integrifolium* Wimm. & Grab.
Barnaby's Thistle—*Centaurea solstitialis* L.
Knapweed—*Centaurea Jacea* L.
Knapweed—*Centaurea maculosa* Lam.
Bristly Ox-tongue—*Picris echioides* L.
Perennial Sow Thistle—*Sonchus arvensis* L.

HOARY CRESS (*Lepidium Draba* L.)

A somewhat hoary perennial weed, from one to two feet high; leaves crowded, with sagittate clasping base, oval or oblong; the upper leaves with broad clasping auricles. Flowers corymbose; white; pods heart-shaped, without wings, rather thick, entire; a conspicuous style.

Robinson & Fernald report this weed as occurring in "waste places and cultivated grounds; not common." However, it has more recently become common in Maryland and Pennsylvania and other eastern states. It has been reported to us frequently during the last few years from northern Missouri and Iowa. The weed was brought in, no doubt, with clover and alfalfa seed.

Extermination: The best way to kill hoary cress is by giving thoro cultivation to fields in which it occurs; as soon as the clover or alfalfa has been removed, the ground should be plowed and cultivated. Plowing and discing should be continued until frost. The land next spring will be in shape to plant to crops.

This weed a few years ago was new to the San Francisco region, as reported by Jepson. In certain sections it has become thoroly naturalized, and fills the fields. It is recognized as a noxious weed in Santa Cruz county.

Fig. 1. Hoary Cress *Lepidium Draba* (L) R. Br.

BARNABY'S THISTLE, STAR THISTLE

(*Centaurea solstitialis* L.)

Fig. 2. Barnaby's Thistle *Centaurea solstitialis* L.

An erect, branching grayish annual, with cottony stem; the lower leaves are lyrate, deeply pinnatifid; the upper leaves are linear, almost entire, with wing decurrent on the stem. The outer bracts of the head bear long, spreading, yellowish spines, the spines at the base being shorter and less numerous than those above. The flowers are yellow, and the pappus is stiff. This weed frequently occurs in alfalfa fields. The spiny involucre makes the plant particularly objectionable in alfalfa and clover meadows.

The general extent of the weed is in waste grounds, from Massachusetts to Iowa. Barnaby's Thistle is being sent in to us from many parts of this state.

Extermination: As this weed is being introduced with alfalfa seed, it is obvious that one remedy for its spreading is to sow clean seed. Seed grown in the regions of the Rocky Mountains and Kansas is not unlikely to contain seed of this Star Thistle. The weed is readily killed by cultivation.

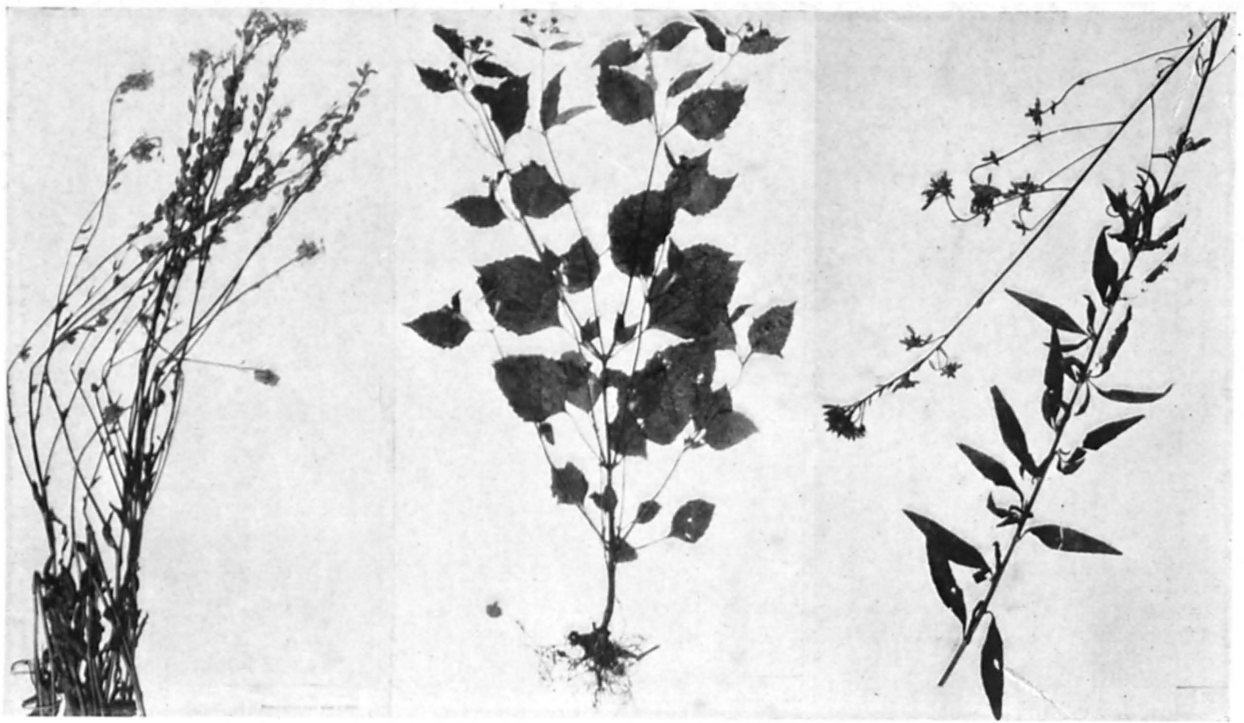

Fig. 3. Hoary Alyssum *Berteroa incana* (L) D. C. Galinsoga *Galinsoga parviflora* Cav. Gaura *Gaura biennis L.*

WILD BLUE MORNING-GLORY (*Ipomoea hederacea* Jacq.)

An annual climbing vine with stems retrosely hairy; leaves heart-shaped, three lobed, acute or acuminate lobes; flowers on short or long peduncles, in clusters of one to three, calyx villous below; corolla whitish, purplish, or pale blue, one to one and a half inches long; seed blackish. Native to tropical America, common in waste and cultivated ground, southward and southwestward; grows in river bottoms of southern and southeastern Iowa; northward to Boone county; troublesome in corn fields.

Extermination: Easily killed by cultivation and the clean culture of fields. The best time to kill these weeds is during the early stages of the plant.

Fig. 4. Wild Blue Morning-glory *Ipomoea hederacea* Jacq.

HOARY ALYSSUM (*Berteroa incana* (L) D. C.)

An erect hoary branching annual plant, from one to two feet high. Leaves lanceolate, oblong, one-half to one and one-half inches long, the lower narrowed into a petiole. Small white flowers on ascending pedicels; pods oblong, pubescent; cells several-seeded; seeds winged.

Hoary alyssum grows in waste places from Maine westward to Missouri. It was probably introduced from Europe with clover seed. It has been reported in Iowa from Traer, Lake Okoboji, Sibley and Malvern, within the past four years.

Extermination: The means of eradication are those used with other annual mustards, cultivation and spraying with iron sulfate, 10 pounds to 50 gallons of water.

GALINSOGA (*Galinsoga parviflora* Cav.)

An annual weed from 1 foot to 15 inches tall. Stem with appressed pubescence. Leaves ovate, crenate serrate, petioled, triple nerved, slightly rough. Flowers in rather small heads, with white ray flowers, and yellow disk flowers. Involucre surrounding the heads of four to five ovate thin bracts. Receptacle conical, chaff narrow. The pappus of disk flowers of narrow pointed scales, occasionally wanting, which are cut fringed.

This weed has been reported more or less frequently from Iowa in recent years. At first it was found only in the vicinity of greenhouses, but in recent years in the streets of cities. Last summer it was observed in Clinton, Marshalltown, Des Moines, Dubuque, Cedar Rapids and Ottumwa.

Extermination: This weed is an annual easily killed by cultivation.

GAURA (*Gaura biennis* L.)

Biennial, three to five feet high, with soft, downy, hairy stems. Leaves oblong, lanceolate, denticulate; flowers in open slender, spikes; calyx tube reddish, prolonged beyond the ovary, usually four lobed; petals clawed, unequal; stamens generally eight, a small scale before each filament; style long; fruit ovoid fusiform, four angled, ends pointed, ribbed.

Gaura is common in southern Iowa from Polk county to Missouri eastward to the Mississippi, and westward to the Missouri river.

Extermination: It is rather easily killed by cultivation. The young vegetative plant should be cut off below the surface of the ground.

PERFOLIATE-LEAVED PEPPERGRASS (*Lepidium perfoliatum* L.)

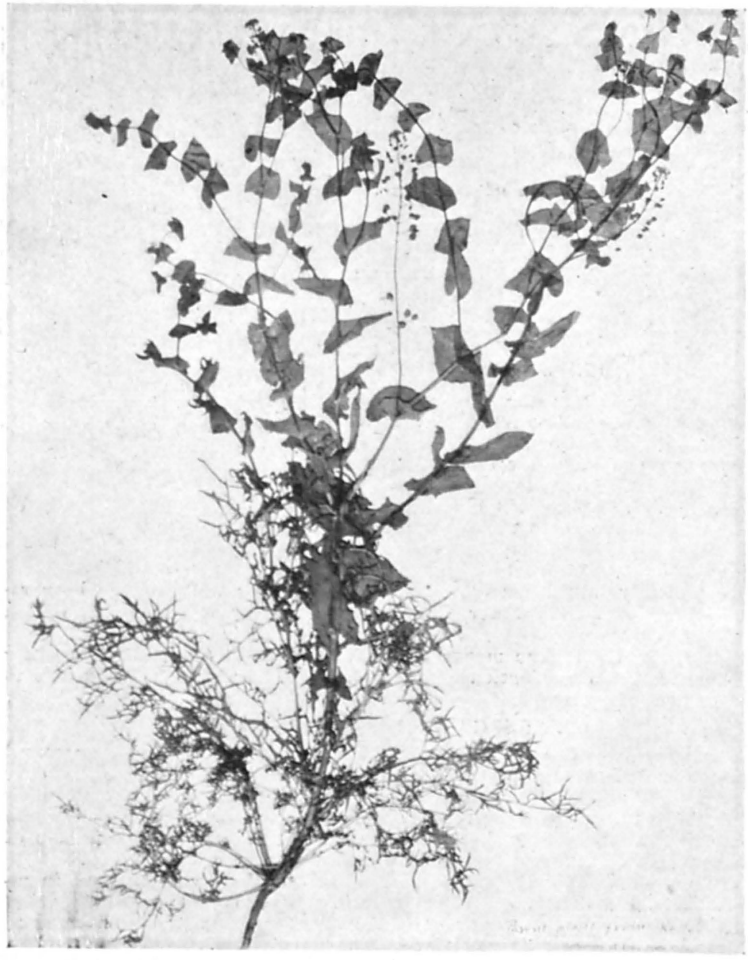

Fig. 5. Perfoliate-leaved Peppergrass *Lepidium perfoliatum*.

A smooth, branching plant, about two to three feet tall; a winter annual; stems leafy; leaves oval to round, pointed, entire, clasping the stem; lower leaves finely divided, deeply cut; the small flowers a yellowish color; the seed pod is oval, notched at top; the seeds are oval, narrowly winged.

This peppergrass is an introduction from western Europe, where it is a weed of fields and roadsides. Specimens have been received from Kelley, Iowa.

Extermination: These weeds may be destroyed by continuous cultivation.

CAPER SPURGE, MYRTLE SPURGE, (*Euphorbia Lathyrus* L.)

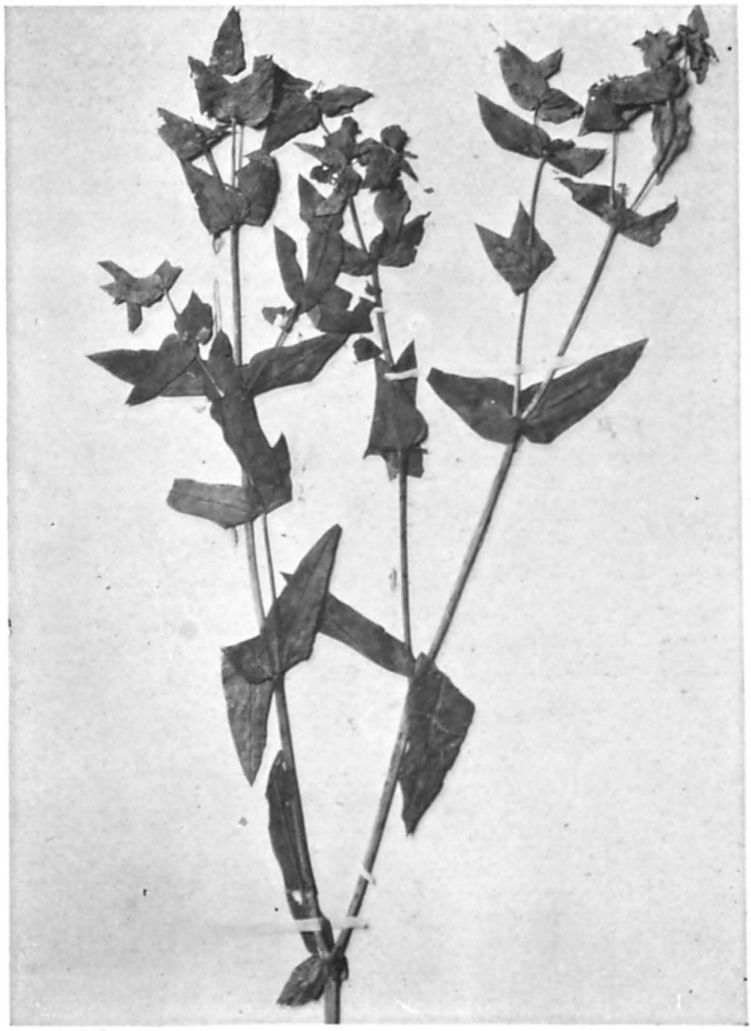

Fig. 6. Caper Spurge *Euphorbia Lathyrus* L.

A smooth, stout plant, one to two and one-half feet high; usually annual, sometimes biennial; the leaves are thick, narrow to linear; the leaves about the flowers are ovate to heart-shaped. The flower cluster is branching. This plant is occasionally found as an escape from gardens.

Extermination: This plant may be destroyed by pulling or by cutting with the hoe.

VIPER'S BUGLOSS, BLUE-WEED *Echium vulgare L.*

Fig. 7. Viper's Bugloss or Blue-weed *Echium vulgare* L.

A bristly leaved, annual plant, one to three feet tall; leaves lanceolate; upper sessile; lower narrowed at the base; small blue flowers in leafy racemes.

Found in dry or sandy fields. Quebec to Virginia and Minnesota. Not common. Abundant locally at Cherokee, Iowa, where it was first reported by Mr. Stiles.

Extermination: This plant should be cut out with a hoe in early spring.

TARWEED OR GUMWEED (*Grindelia squarrosa* (Pursh) Dunal.)

Fig. 8. Tarweed *Grindelia squarrosa* (Pursh) Dunal.

This plant of the prairies is a coarse perennial, resinous-viscid herb, with sessile narrowly oblong leaves and many flowered heads. The outer ray flowers as well as the disk flowers are yellow. The bracts of the involucre about the head, are blunt or squarrose.

Gumweed is becoming more common thruout the state. It is a familiar weed of western Iowa. It occurs in the McGregor district of northeastern Iowa, and near Camanche. It has been abundant at Moingona for 30 years, whence it has spread westward to Ogden and eastward to Jordan.

Extermination: Gumweed can be destroyed by giving clean cultivation thruout spring and summer. To remove weeds from a badly infested field, plow as soon as the crop is off and then disc several times during the fall. Sow seed free from the seeds of gumweed.

PLUMELESS THISTLE, NODDING THISTLE (*Carduus nutans L.*)

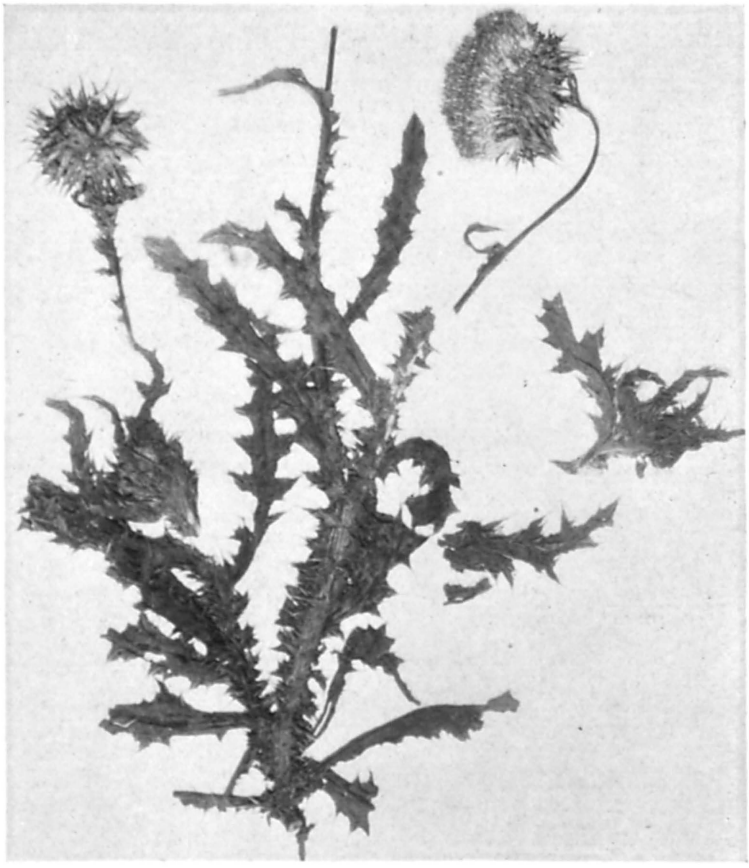

Fig. 9. Plumeless Thistle or Musk Thistle *Carduus nutans* L.

This plant is a biennial four to five feet in height, with spiny sinuate-lobed leaves. The leaves are decurrent upon the stem, in spiny wings. The flowers are purple, in solitary drooping heads. The involucral leaves surrounding the head are spiny. The hairs (pappus) attached to the seed are not plumose as in other thistles. This thistle has appeared in a few places in Iowa.*

Extermination: Since this weed is a biennial, the best treatment is to plow in July, disc, and keep the field clean. A watch will have to be kept the following season. It is the habit of the plant to produce a cluster of leaves close to the ground the first season; the flowering shoot is sent up the second season.

*Specimens in the Iowa State College collection are from Clarinda, Atlantic, Carroll, Camanche and Sac City.

SMALLER PLUMELESS THISTLE (*Carduus acanthoides L.*)

Fig 10. Smaller Plumeless Thistle *Carduus acanthoides* L.

An annual or perennial thistle, with spiny leaves strongly decurrent upon the stem; the wings along the stem are also very spiny. Heads small, with rose-colored flowers, and linear bracts; the outer bracts are herbaceous and spreading. The bristles of the pappus are not plumose. This thistle has been observed at several places in Iowa including Carroll, Anita, Joice and Pomeroy. The source of plumeless thistle is seed imported from Europe. *Carduus acanthoides* is frequently self-sown when cultivated in gardens.

Extermination: The weed is easily destroyed by cultivation. The young plants should be cut off below the surface of the ground; flowering shoots of the older plants, also should be cut below the ground.

BROWN CENTAUREA OR RAYED CENTAUREA (*Centaurea Jacea* L.)

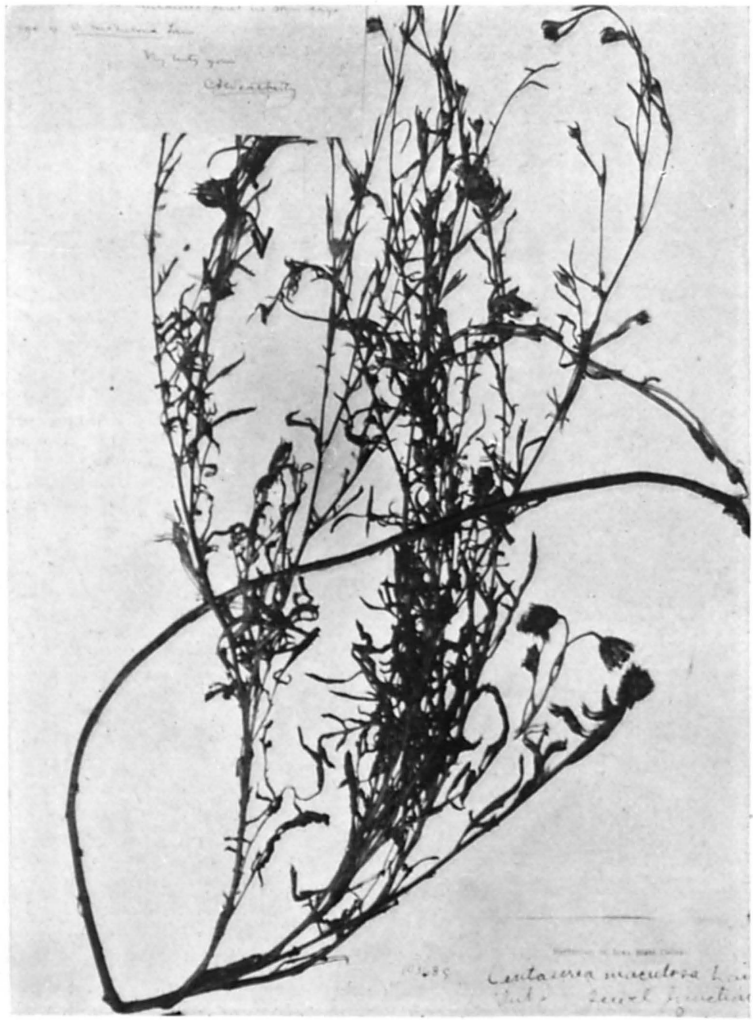

Fig. 13. Knapweed *Centaurea Jacea* L.

A simple branched perennial, 18 inches to 2 feet tall; leaves lanceolate or oblanceolate, denticulate, the lower petioled, the upper sessile; flowers in medium sized heads; showy rose purple; marginal conspicuously enlarged and falsely radiate. Involucre surrounding the head subglobose, outer bracts pale in color, the others glossy, dark brown, entire or slightly lacerated.

The specimen was first sent to us by Mr. Ellis of Cherokee, and later the place was visited by one of us. It covers about one-sixteenth of an acre in a pasture, and is gradually spreading. The species occurs with chicory and wild carrot, which cover waste grounds along fences.

Fig. 11. Uncut-leaved Canada Thistle *Cirsium arvense* var. *integrifolium.*

Extermination: This weed can be killed by frequent cultivation.

UNCUT-LEAVED CANADA THISTLE

(*Cirsium arvense* var. *integrifolium* Wimm. & Grab.)

A perennial plant of medium height, one to three feet tall, with creeping roots and rootstocks. Leaves mostly entire or only slightly sinuate cut, slightly prickly; the lowest leaves somewhat pinnatifid, slightly woolly beneath, soon becoming green; flowers small, rose, purple or purplish, imperfectly dioecious. The bracts of the involucre appressed and only slightly prickly pointed; achenes or "seeds" one-twelfth to one-eighth inch long, of grayish yellow color, the upper part with a yellowish ring. Distribution is local from Quebec to New England and New York.

The occurrence of this weed in Clinton county, Iowa, therefore, extends its range considerably. A specimen was first sent to us by Prof. F. G. Churchill of the Extension Department. This plant was reported in 1894 from Waukon, Denison and elsewhere. There seem to be several forms of the thistle, which have more or less plane and entire leaves.

Extermination: This pernicious weed must be treated like Canada thistle. Plow as soon as the small grain crop is removed, and disk the field frequently during the remainder of the season. When in corn fields, it is best to keep the field clean by frequent cultivation with the hoe. Plow early next season and give clean cultivation in the spring. It is best not to sow to small grain but use a dense growing crop like Sudan grass or sorghum.

Fig. 12. Lower and upper leaves of uncut-leaved Canada Thistle.

KNAPWEED (*Centaurea maculosa* Lam.)

Fig. 14. Knapweed *Centaurea maculosa* Lam.

A pubescent or glabrate biennial or perennial with ascending wiry branches; leaves of stem mostly linear, lower leaves pinnatifid, divided into linear or lanceolate divisions; flowers in medium sized heads, whitish, rose-pink or purplish. The marginal falsely radiate. The involucre surrounding the flowers is somewhat bell-shaped, in the fruit, open. The outer and middle bracts bear fine points, with five to seven pairs of cilia at each of the dark tips. The distribution given by Robinson & Fernald as New England to New Jersey. It was first reported from Forest City.

Extermination: Since this weed is biennial, it is easily killed by cultivation. The young plants should be cut off below the surface of the ground.

OX TONGUE (*Picris echioides* L.)

Fig. 15. Bristly Ox-tongue, *Picris echioides* L.

A coarse, rough, medium sized, branched plant, annual or biennial; about two and one-half feet tall; leaves lanceolate, spinescent. The many flowered heads occur at the end of leafy branches; involucre surrounding the head loose or spreading, scaly, the scales spinescent; outer bracts ovate or sub-cordate, the inner nearly heart-shaped; achenes, so called seed, with

rugose ribs, beaked; pappus plumose.

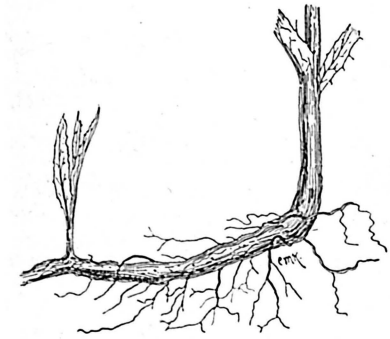

Fig. 16. Rootstock of perennial Sow Thistle.

below the head is bristly, as also, are the greenish leaves surrounding the head. The lower leaves are runcinate pinnatifid, and spiny-toothed on the margins, narrowed into a petiole at the base. The upper leaves pinnatifid, or entire, clasping the stem. The flowers are bright yellow, in rather large showy heads. The seeds (achenes) are transversely wrinkled.

This thistle has been noted at Sanborn, Spencer and Waukon, Iowa. It is rapidly moving southward from Canada where in some localities it is so abundant that the flying seeds fill the air at times.

Extermination: Summer fallow with frequent cultivation is the most successful method of eradication. Small patches of the weed may be removed by digging out the roots as thoroly as possible several times a season. Care must be taken not to distribute portions of the rootstocks over the fields by implements. The perennial sow thistle plants can be killed by some method which will prevent the development of leaves, for a period sufficiently long to smother the roots.

Robinson & Fernald state that it is found in waste places, and occurs sparingly in the eastern United States.

This weed has been distributed in the clover and alfalfa seed. It has been reported as troublesome.

Extermination: It is easily destroyed by cultivation. If troublesome it should be uprooted.

PERENNIAL SOW THISTLE

(*Sonchus arvensis* L.)

This plant is a perennial with creeping rootstocks. It is a smooth, leafy stemmed plant with milky juice. The portion of the stem

Fig. 17. Perennial Sow Thistle *Sonchus arvensis* L.